

EXP5: jump instructions



Objective

The objective of this experiment is to:

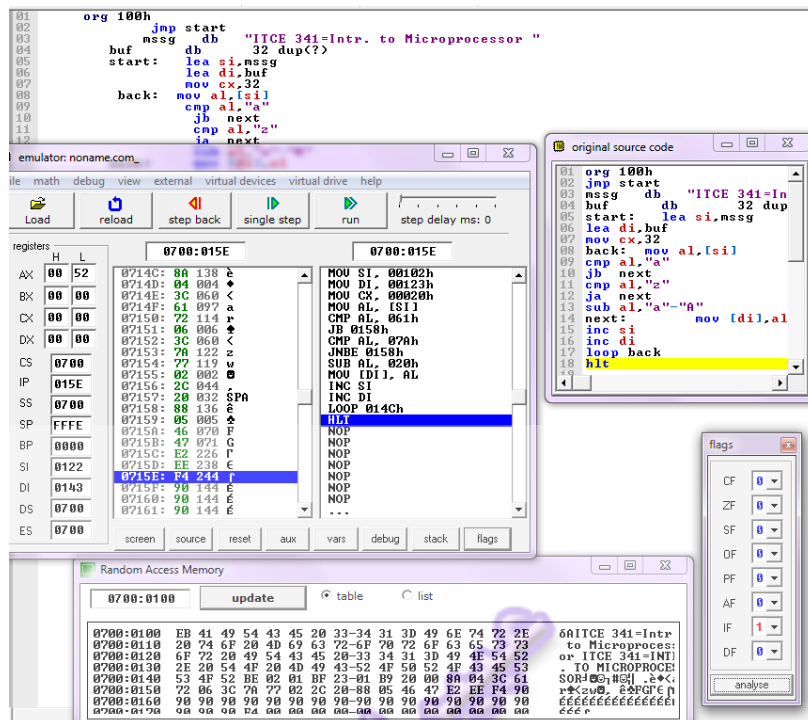
- Implement Unconditional & Conditional JUMP Instructions

Procedure

1. Run emu8086 program
2. In the welcome window click new button
3. In the choose template window select empty workspace
4. In the Source Code Editor window type the following program:

```
org 100h
    jmp start
mssg db "ITCE 341=Intr. to Microprocessor "
buf  db 32 dup(?)
start: lea si,mssg
      lea di,buf
      mov cx,32
back:  mov al,[si]
      cmp al,"a"
      jb next
      cmp al,"z"
      ja next
      sub al,"a"-"A"
next:  mov [di],al
      inc si
      inc di
      loop back
      hlt
```

5. Simulate the program by clicking on emulate button.
6. To view the effect on the processor flags during execution, open the flag window by clicking on the flag button, the flag window will appear.
7. To view the effect on the memory locations mssg and buf, press AUX, then press Memory such that you can watch this RAM area (CS:0100) during program execution.
8. Press on the *step* button to execute the program step by step, and view carefully the affected registers and flags and memory. Record them all.
9. Step through the whole program once and verify that the things are working as expected.



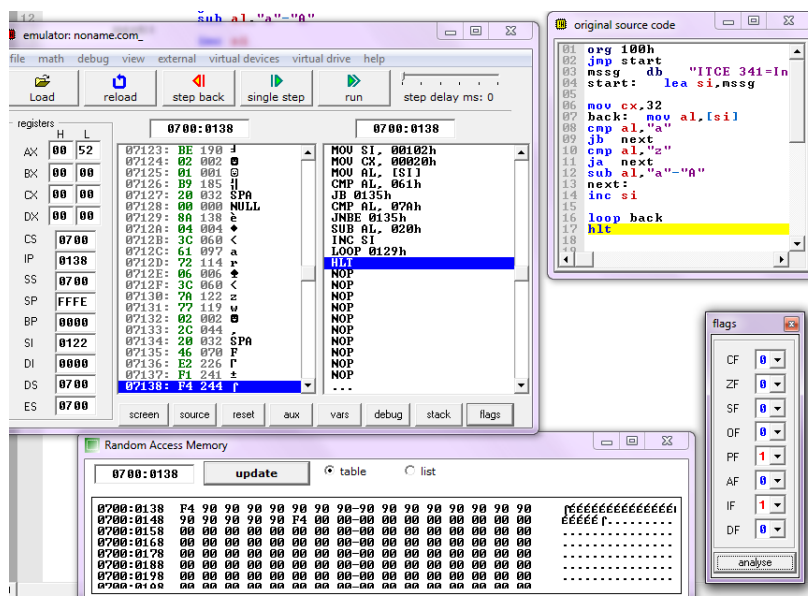
10. Modify and implement the program such that every capital letter is changed to small in its location mssg (i.e. no need for buf in the modified program).

org 100h

```

    jmp start
mssg db "ITCE 341=Intr. to Microprocessor "
start: lea si, mssg
       mov cx, 32
       back: mov al, [si]
              cmp al, "a"
              jb next
              cmp al, "z"
              ja next
              sub al, "a" - "A"
              next:
                inc si
                loop back
              hlt

```



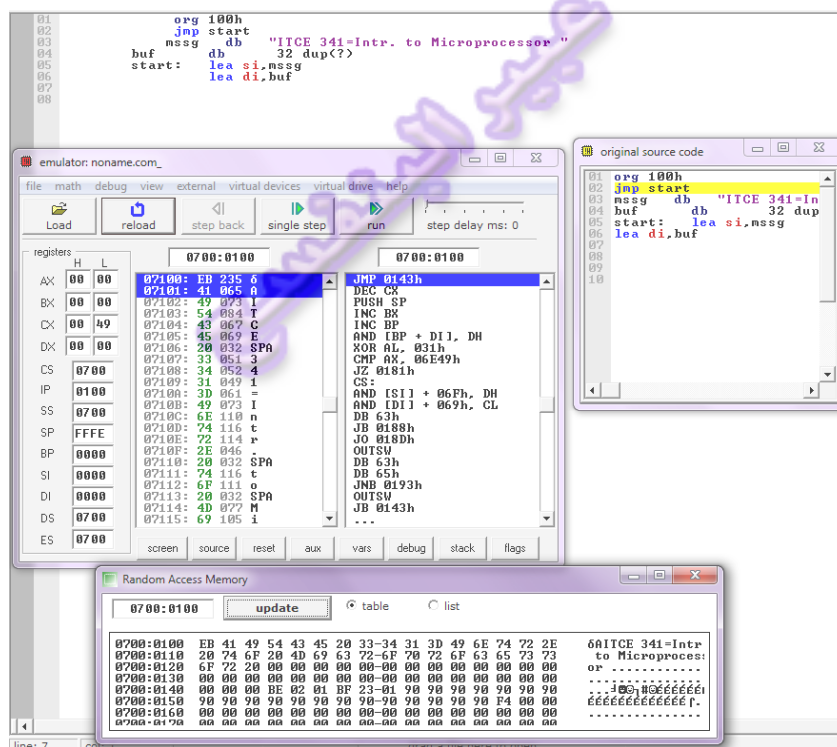
Done by: Abeer(www.UOB-BH.com)

Report:

1. Hand assemble `jmp start` instruction and verify it with Emulator assembly.

EB

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2. Write and implement a program that computes the first 15 numbers in

Fibonacci Sequence and save them in Z:

$$F(n) = F(n-1) + F(n-2)$$

where $F(0) = 0$ & $F(1) = 1$

that is, $F(2) = F(1) + F(0) = 0 + 1 = 1$

$F(3) = F(2) + F(1) = 1 + 1 = 2$

and so on

The sequence of numbers (in decimal) will look like:

$Z(n) = 0 \ 1 \ 1 \ 2 \ 3 \ 5 \ 8 \ 13 \ 21 \ \dots$ etc..

